21st Century Prospects

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Two friends—a biologist and a toy maker—were lost in the Sahara and they were trudging along, desperately thirsty, when the biologist saw a peculiar object sticking out of the sand. "Look," he said, "a marine fossil: proof that this desert once used to be an ocean." The toy maker inspected the object and said: "That's not a fossil, it's a child's toy: proof that people might still live around here and water might be nearby." They debated for a while, then started to argue and finally came to blows.

Whatever your understanding of a thing, and whatever signification it may have for you, everything that you encounter in this world will force a response from you. You may choose to ignore it, to flee it, to own it, to destroy it, or to understand it, and so on and so on. Many, many responses are possible. The IEC is a thing in this world and its presence forces a response of some sort from industry, from governments, and from academia, as well as other players.

The USA took a leading role right at the very beginning of international electrotechnical standardization when the idea for the IEC originated in St. Louis, in 1904. The IEC was officially founded two years later, with the USA as one of the founding members. The aim then, as it is today, was to reach consensus on international standardization. At that time, electricity generated by human effort was new technology and part of the reasoning behind creating international standards was to help the new technology spread so that everyone in the world over could enjoy its benefits. When you read from that earlier time some of the declarations concerning the benefits to humankind that were to derive from the advance of science, the sentiment appears to be slightly naive: world peace and the end to hunger seemed to be just around the corner. Perhaps those sentiments appear naive because the promised benefits have not been delivered, or at least not yet delivered in full. Or maybe it's because we lived through some very difficult and very violent times in the 20th century that we see those pre-World War I sentiments as being slight naive. But if we listen carefully, we continue to hear the same ideas being expressed today. The expression may be less or more reserved, but no one doubts the idea that science will deliver on its promises, that it will deliver new developments destined to benefit humankind as a whole. There is much evidence in the world today that science and engineering are delivering on the promise. That's not to say there aren't mistakes and errors. Killer bees and mad cows are but two examples. But the really exceptional technological revolution that humans have witnessed from the late 19th century until today provides many, many examples of beneficial science.

I think we will all agree that this revolution involves a tremendous amount of sharing amongst different technological communities. Chemists share with biologists, who share with astronomists, and electrical engineers share with mechanical engineers, who share with civil engineers, and so forth. The technological revolution involves fusion and merging. If we take a telephone system as one example among many, we see the seamless fusion of electricity with other technologies. Just as technology merges, so the international standards development organizations—and with your consent I'll call them ISDOs just to make things easier for my tongue—so the ISDOs that prepare standards for that technology need to coordinate their efforts. Each ISDO has its field of work and I am not saying that one ISDO should try sowing its own seeds in someone else's field. But to make the telephone system, some coordination has to exist between those who know about electricity and those who know about mechanics: you have to lay cables, launch satellites, build microwave towers, and so on. To make standards for the telephone system as a unit, and not as a collection of separate systems, requires coordination between those who know about electrotechnical standards on one hand, and a variety of other kinds of standards on the other. That way, the system works as expected.

The market, and ultimately the consumer, will reject the notion of standards development organizations working in a purely independent manner exactly because the trend is towards merging and fusion and towards internationalization and globalization of trade. The market wants a one-stop shop for standards and certification. If the market is becoming, or is now global, and if the products and services within it are to be considered global, then the standards on which they are based should also be global. I wish to qualify that last statement. Not every single standard on this planet should be an international consensus-based standard and *only* an international consensus-based standard. The market will tell us what it wants, will tell us when it wants an international standard or when a national standard is sufficient. The important point is how we go about providing the market with international standards.

For many years now the IEC and its partner organizations, ISO and the ITU, have provided the means for every country in the world to participate actively in developing together global, consensus-based international standards.

The development process for international standards allows an essential level of consensus, a stable foundation on which to build an agreed route forward. Technical standards are voluntarily conceived, elaborated, adopted, and applied by users ranging all the way from individuals through companies, professional associations and national governments to regional groupings. They are democratically developed in the widest global perspective, aiming to offer the greatest good to the greatest number.

We are all aware that there is a very difficult trade-off to be made between speed and legitimacy: standards that are developed rapidly and that at the same time represent the voices of all players. The ideal is to have both in their fullest form, but we humans don't often get the chance to encounter the ideal in this world. Greater speed means fewer voices while more voices mean less speed. What to do? I think the point can be found here, in the USA. It can also be found in the United Kingdom, in Japan, in South Africa, in Brazil . . . In short, it can be found wherever you find democracy, and the United States is one of the greatest examples of a democratic system. Democracy takes time. Ensuring that everyone has the opportunity to have their say is the basic principle here in the United States, just as it is in the IEC. But that can't always be done quickly. The market wants things quickly, wants things immediately. Well, if we have to make the choice, which do we prefer? Speed of delivery, or that everyone has the opportunity to have their say? I'd like to see both, but I know I can't. So I'll choose democracy because there are times when we have to resist the tyranny of the market. There are times when we have to create structures and systems to make sure that everyone gets the chance to participate.

It's a tough, Darwinian world and survival of the fittest applies to creatures just as it applies to companies and organizations. Keep up or fall behind seems to be the rule. But the market isn't independent of us humans because we humans create the market. And if we create it, then we can also introduce structures and systems to influence it. With globalization, ISDOs will come under more and more pressure to survive in the Darwinian market. We will find ourselves confronted by political, economic and technological challenges at such places as the World Trade Organization. These challenges are very likely to have a profound impact on our work and this could be a negative impact if we don't prepare for it.

It is time now to prepare for the future that is to come. Rather than race blindly ahead, endlessly striving to try to stay ahead of the other carnivores in the pack, we need to call a halt to consolidate and regroup. All standards development organizations, whether national, regional or international, have one thing in common: we make standards for products, systems, and services. And we do so with the aim of providing a benefit to industry, to government and to the consumer. This commonality can serve as the basis for united strength and for transformation. We live in a world of change. Another word for change is adaptation, and that's what Darwin talked about. If we do not recognize the change that is going on around is, we won't be able to adapt to it. This will render us obsolete, perhaps ultimately even extinct.

In a world where trade is globalizing, where there is greater similarity amongst peoples and cultures, and where communications are both total and transparent, we need to sit down together. We need to sit down together, take stock of where we are, estimate where we think we're going, and find a solution that is appropriate to the challenges that face us. If we live in a world where trade is globalizing, then clearly, when it is appropriate, we need a global solution.

The IEC, ISO, and the ITU have taken initiatives that will lead to working more closely together. This will lead to a forum where we can coordinate efficiently our policies and politics for developing international, consensus-based standards. Together the three ISDOs cover a vast amount of technological territory. Only by working together can we ensure that we will meet the challenge of preparing standards for fast moving, merging technologies in a fast-paced, global market.

The United States was a founding member of the IEC, ISO, and the ITU. Traditionally the USA participates very actively at all levels in the three organizations. America is an especially important contributor to standardization in fields of emerging technology. The United States has the advantage of a giant domestic market and this market requires standards. So American industry develops standards for high tech and emerging technologies in the dynamic American market, and often enough these standards became the basis for subsequent international standardization work. American innovation is often the cutting edge for new technology, and the American economy, as the most powerful and dynamic of all economies, is the place where much technological leadership takes place.

If we are to address the fast-paced, globalizing, technological market in a way that is appropriate, how should we do it? A single, international platform, where all players, all industry and all consumers have their say

is the best way to go. It is the right structure within which everyone can contribute to create international, consensus-based standards. I am not suggesting that we create a new layer of government, or another bureaucracy in addition to what we already have. I do not suggest that because the elements already exist. All we need to do is rearrange their relationships in the right way, at the right time.

There is no doubt that the United States leads the world in many ways. Whether this is a responsibility you seek actively, or that is thrust upon you by circumstances, is a debate for another time and place. Today, I am suggesting that the USA has another opportunity to support an idea and take a leading role in it. Just as in 1904 you enjoyed a leadership role in helping to create the IEC, so today you have the opportunity to continue in that role by helping to create an international standardization effort that will coordinate the work of national, regional, and international SDOs. While we as engineers would perhaps like to devote ourselves entirely to the practical aspects of preparing standards for technology, while we would like to focus on amperes and watts and nanoseconds and tensile strength and a hundred other variables, unfortunately the politics of standardization has a way of intruding on our world. The world will not let us ignore non-engineering and non-scientific issues. So let us address them also and find the common ground where we can concentrate on important issues together. Let us take our guidance from the market itself, which is telling us that globalization is the future. That being the case, a globalized response seems to be the right thing when it is appropriate. We can see the need for this and we now have the opportunity for it. Let's do the right thing . . . together.

We are here today to celebrate 100 years of work, 100 years of effort, 100 years of history. I speak for the entire IEC family when I say that I am proud to be invited here to congratulate the National Institute of Standards and Technology on its 100th anniversary. Being around for 100 years and remaining a valid contributor throughout that period are admirable achievements and proof that, in this Darwinian world, you have known how to survive and adapt.

Now, let us return to the biologist and the toy maker that I mentioned at the beginning. We left them fighting over the signification of the object they found in the sand. Well, months later a solitary traveler on a camel passing by on his way home from a long journey came across two skeletons lying at the base of a dune, bony hands clutching each other's bony throats, and between them he saw something familiar. He got off his camel, knelt down and picked it up with a happy smile and said: "I'd wondered where I'd lost my prayer beads."

Thank you for listening.